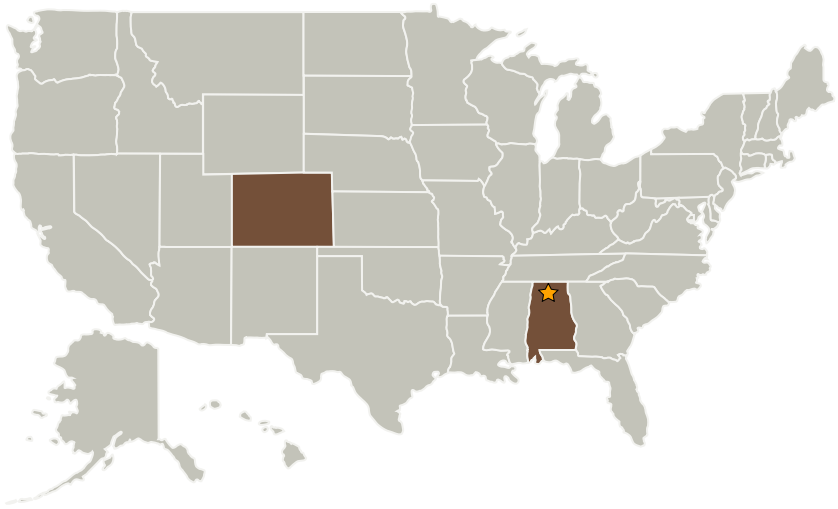
Production of Synthetic Lunar Simulants, Phase I

Completed Technology Project (2009 - 2009)

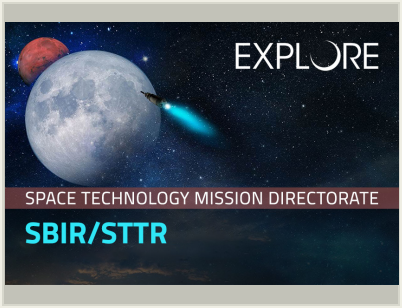
Project Introduction

Zybek Advanced Products has proven the ability to produce industrial quantities of lunar simulant materials, including glass, agglutinate and melt breccias. These are critical components in the NU-LHT-series and OB1 lunar simulants. The feed stock for this simulant is a mining industry by-product. The feedstock contains many contaminates, may not always be available, and can be inconsistent. Although the standard lunar simulant produced from the mineral industry byproduct feedstock is useful for some applications, many projects require a simulant with a higher fidelity. This project provides the means to produce individual components that are not available from terrestrial sources. These components can be mixed in different proportions to determine the effect on a particular process. The basic theory of the innovation is to mix known industrial ingredients, bring to molten temperatures, allow time for full reaction (in molten state), and then control the cooling rate to cause re-crystallization. These components are readily available and can be processed at multi-ton rates in the plasma melter.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Zybek Advanced Products, Inc.	Supporting Organization	Industry	Boulder, Colorado



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Alabama	Colorado

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.1 In-Situ Resource Utilization
    - TX07.1.2 Resource Acquisition, Isolation, and Preparation